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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,737	06/26/2006	Lisbeth Kalum	10572.204-US	8173

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NOVOZYMES NORTH AMERICA, INC.  
500 FIFTH AVENUE  
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NEW YORK, NY 10110

EXAMINER
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INYARD, APRIL C

ART UNIT	PAPER NUMBER
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1794

NOTIFICATION DATE	DELIVERY MODE
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07/10/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Patents-US-NY@novozymes.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,737	<b>Applicant(s)</b> KALUM, LISBETH	
	<b>Examiner</b> APRIL C. INYARD	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/26/2006</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

## DETAILED ACTION

### *Claim Objections*

1. Claim 2 is objected to because of the following informalities: Claim 2 is written in independent form, but refers to step (b), whereas the Examiner believes Applicant intended to refer to step (e). Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-3, 7, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Street (US Patent No. 5,447,734) as evidenced by deMan (Principles of Food Chemistry (3<sup>rd</sup> Edition), Springer – Verlag, 1999: Chapter 10, pp. 389-428):**

Street teaches a method for preparing a potato product comprising the steps of peeling, cutting, cooking by blanching (boiling), treating with preservatives and enzymes, and vacuum packaging the potatoes (*Abstract; Col 2, lines 33-68; Col 3, lines 1-5*), where treatment of the potatoes with preservatives act to prevent microbial growth, starches from bleeding out of the inside of the potato during storage and cooking, oxidation and browning of the cut potato pieces, and to maintain a fresh white appearance for the cut potato pieces, thus extending the shelf life of the final packaged product (*Col 3, lines 44-68 and Col 4, lines 1-4*). The process of Street results

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in a non-frozen consumable processed potato product that has the desirable taste and consistency of a fresh potato product (*Col 1, lines 22-25*).

- The potato of Street corresponds to a vegetable product, specifically a potato in concordance with the limitations of Claims 3 and 9.
- Street teaches Applicant's step (a) of peeling of potatoes.
- Street teaches Applicant's step (b) wherein the potatoes are treated with preservatives, in addition to simultaneous boiling by blanching, before the vacuum packaging step.
- Street teaches Applicant's step (c) of vacuum packaging the treated potatoes.
- Street teaches the step of cutting the potato into pieces in concordance with the limitations of Claim 7.

Regarding the treatment step (b) as taught by Street, Street teaches that treatment includes use of ascorbic acid to prevent auto-oxidation and browning of the cut potato pieces (*Col 3, lines 57-60*).

As evidenced by deMan, oxidoreductases are enzymes that act to prevent or minimize enzymic browning by exclusion of molecular oxygen and addition of reducing agents that can prevent the accumulation of *o*-quinones, which includes use of ascorbic acid as a reducing agent which reacts with *o*-quinones and changes them back into *o*-diphenols, where oxidation of food products can lead to very unpleasant off-flavors in the product (*pp. 415-416; Fig. 10-14*).

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The Examiner therefore considers the teaching in Street of ascorbic acid to correspond to treatment with an agent that acts as an oxidoreductase to prevent enzymatic browning and maintain the freshness in taste of the product.

Therefore, Street teaches a method for producing a vacuum packed pre-boiled vegetable product that meets the limitations of **Claims 1-3, 7 and 9**.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claims 4-6, 10-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Street in view of Xu (US Pub 2002/0004085):**

As discussed above, Street teaches a method that meets the limitations of Claims 1-2.

Regarding **Claims 4-6, 10-14, 16-17, and 20-21**, Street does not specifically disclose use of an oxidoreductase selected from Applicant's Markush group.

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However, in an analogous art, Xu teaches a method for making a consumable potato product that involves the steps of washing and peeling of potatoes followed by treating the potato with an effective amount of one or more exogenous enzymes selected from the group consisting of an amyloglucosidase, glucose oxidase, laccase (**Claim 20**), lipase, maltogenic amylase, pectinase, pentosanase, protease, transglutaminase (*Abstract; pars [0031]-[0038]*) and carbohydrate oxidase (**Claim 17**) (*par. [0114], Examples*). Xu discloses that such a method improves one or more properties of the potato product obtained including crispiness, color, firmness, and lower absorbance of oil if cooked in oil (*par. [0031]*).

Xu teaches that the enzymes are obtained from microorganism including bacterial and fungus, wherein such enzymes include those derived from the bacteria *Bacillus licheniformis* and the fungi *Aspergillus niger* and *Asperigllus oryzae* (*pars. [0074]-[0079] and [0081]*). Xu further teaches that the glucose oxidase used as part of the enzyme treatment may be derived from *A. niger* and *A. oryzae* (**Claims 10-11, 14 and 21**) (*par. [0081] and Examples*).

Regarding the recitation of a catalase and pyranose oxidase in **Claims 6 and 18**, the Examiner interprets “catalase” as defined by the Applicant as a fungal glucose oxidase or pyranose derived from a strain of *Aspergillus*, where these enzymes may also be due to a side activity of the glucose oxidase composition.

As such, Xu teaches use of GLUZYME™, a glucose oxidase derived from *Aspergillus*, as part of the enzyme composition used to treat consumable potato products (*par. [0081] and Examples*), the Examiner considers this to be capable of having both catalase and pyranose oxidase activities and thus meets the limitations of Applicant’s instant claims.

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Regarding **Claim 12**, as discussed above, Xu teaches that any variety of enzymes may be derived from *B. licheniformis*. Inasmuch as the Applicant does not specifically teach a glucose oxidase or use of a glucose oxidase derived from *B. licheniformis* in the present disclosure, the Examiner takes the position that the general teaching in Xu of enzymes derived from *B. licheniformis* reads on Applicant's limitation for a glucose oxidase derived from *B. licheniformis*.

It would have therefore been obvious at the time the invention was made to one having ordinary skill in the art to modify the enzymes derived from *B. licheniformis* as taught by Xu to include glucose oxidase, because Xu teaches that any known enzymes may be derived from *B. licheniformis*, and it would be obvious to derive glucose oxidase from this source as such an oxidase is replete in the art as taught by Xu for treating potato products to yield the predictable result of a consumable product with improved taste, color, and texture.

**7. Claims 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Street in view of Xu in view of Baker (US Patent No. 2,482,724):**

As discussed above, Street teaches the method of claim 1.

The ascorbic acid treatment of Street is considered to correspond to an oxidoreductase, as such a treatment prevents the oxidation of the cut product and ensures a consumable non-frozen potato product that is fresh in taste, color, and texture (*see above*).

As discussed above, Street in view of Xu teach addition of enzymatic oxidoreductases, particularly glucose oxidase, catalase, carbohydrate oxidase, and laccase (*see above*).

Neither Street nor Xu teach that the oxidoreductase treatment may comprise treatment with a galactose or amino acid oxidase.

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However, in a related art of treating food products from the deleterious action of oxidizing, Baker teaches treatment of a sealed (bottled, canned) food product with oxidases which will catalyze the oxidation of a substance already present in the product to thereby consume the available free oxygen in a harmless way and prevent the oxygen from combining with other ingredients of the product to produce undesirable effects (*Col 1*). Baker teaches that various substrates in food products require various oxidases, including glucose and amino acid oxidases (*Table I*). Baker further teaches that glucose oxidase is an enzyme capable of acting on galactose as a substrate:

**Table I**

Oxidase	Substrate
tyrosinase	phenols and catechols
aldehyde oxidase	aldehydes and peroxides
amino acid oxidase	amino acids
uricase	uric acid
glucose oxidase	glucose, mannose, galactose
xylose oxidase	xylose and diaminos
lipase	unsaturated fatty acids
ascorbic oxidase	vitamin C

Therefore, the teaching of Street in view of Xu that the oxidase is a glucose oxidase, is considered to meet Applicant's limitations of a galactose oxidase as glucose oxidase is capable of acting on galactose.

Additionally, it would have been obvious at the time the invention was made to one having ordinary skill in the art to modify the process of Street in view of Xu by substituting one known oxidase for another, an amino acid oxidase, because as taught by Baker various substrates present in food products require enzymes specific to that substrate in order to reduce the amount of oxidation of the final product resulting in the prevention of any further degradation of the



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potato product and an increase in the appearance, freshness, and shelf-life of the vacuum-packed consumable potato product of Street in view of Xu.

Further more, it would have been obvious at the time the invention was made to one having ordinary skill in the art to modify the process of Street in view of Xu by substituting one known oxidase for another, an amino acid oxidase, because Baker teaches that these are known oxidases, and selection of a known material based on its suitability for its intended purpose is considered to be within the level of ordinary skill in the art, see *MPEP 2144.07*.

**8. Claims 15-16 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Street in view of Xu as evidenced by Montgomery (US Patent No. 4,617,190):**

As discussed above, Street teaches the method of claim 1.

The ascorbic acid treatment of Street is considered to correspond to an oxidoreductase, as such a treatment prevents the oxidation of the cut product and ensures a consumable non-frozen potato product that is fresh in taste, color, and texture (*see above*).

As discussed above, Street in view of Xu teach addition of enzymatic oxidoreductases, particularly glucose oxidase, catalase, carbohydrate oxidase, and laccase (*see above*).

Neither Street nor Xu teach that the oxidoreductase treatment may comprise treatment with a galactose, hexose, pyranose, or amino acid oxidase.

However, as evidenced by Montgomery, various oxidases suitable for addition to and treatment of food products fit for human consumption include:

**TABLE A**

<b>OXIDOREDUCTASE ENZYME</b>	<b>OXIDIZABLE SUBSTRATE</b>
<b>Glucose Oxidase</b>	<b>D-D-glucose</b>
<b>Hexose Oxidase</b>	<b>Hexose</b>
<b>Galactose Oxidase</b>	<b>D-galactose</b>
<b>Pyranose Oxidase</b>	<b>Pyranose</b>
<b>Pyruvate Oxidase</b>	<b>Pyruvate</b>
<b>Oxalate Oxidase</b>	<b>Oxalate</b>
<b>DL-aminoacid Oxidase</b>	<b>DL-aminoacid</b>

It would have therefore been obvious to one having ordinary skill in the art at the time the invention was made to modify the enzymatic treatment of the cut potato products as taught by Street in view of Xu by selecting any oxidase known in the art because, as evidenced by Montgomery, these are all known oxidases that act on different substrates, and the simple substitution of one known enzyme for another will achieve the same result which is to prevent any further degradation of the potato product and increase the appearance, freshness, and shelf-life of the vacuum-packed consumable potato product, where simple substitution of one known material for another is considered to be within the level of ordinary skill in the art, see *MPEP 2144.06*.

Furthermore, It would have therefore been obvious to one having ordinary skill in the art at the time the invention was made to modify the enzymatic treatment of the cut potato products as taught by Street in view of Xu by selecting any oxidase known in the art because, as evidenced by Montgomery, these are all known oxidases that act on different substrates, and depending on the desired action of the enzyme and the type of substrate in the vegetable product,

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it would have been obvious to the skilled artisan to select a known material based on its suitability for its intended purpose, see *MPEP 2144.07*.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to APRIL C. INYARD whose telephone number is (571) 270-1245. The examiner can normally be reached on Monday - Thursday 8:00 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Sample can be reached on (571) 272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R. Sample/  
Supervisory Patent Examiner, Art Unit 1794

APRIL C INYARD /A. C. I./  
Examiner, Art Unit 1794

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